Executive Summary
Department of Mines, Minerals and Energy (DMME)
Innovative Technology

The Department of Mines, Minerals and Energy (DMME) is digitally archiving all maps of underground coal mines in southwestern Virginia and making them readily accessible to regulators, the mining industry, and the public. For this, the Department has developed innovative, cost-effective tools for data development, data storage, and data delivery. This information system is already changing business practices and producing immediate, lasting benefits in the areas of mine safety, public safety, economic development, environmental protection, and energy resource analysis.

Background

Development of energy resources is critical to our nation's economy. In southwestern Virginia, development of coal and natural gas resources has occurred alongside other land uses such as business, agricultural, and residential for over a century. It is the joint responsibility of regulatory agencies such as DMME and industry to ensure that resource development is carried out in a manner that ensures public safety, worker safety, and environmental quality.

One challenge to this mandate is managing the complex overlapping geometry of old mines, new mines, gas wells, and other infrastructure. Often, critical information is depicted on old mine maps in private or proprietary collections that are often inaccessible to other mining companies and regulatory agencies. As a result, people in industry and government do not always have the necessary information to make informed decisions.

In 2002, nine Pennsylvania miners were trapped underground when they accidentally mined into an abandoned, water-filled mine. In a dramatic rescue, all of the miners were saved, but the estimated costs of the rescue, cleanup, and repairs ranged up to $7 million. The accident was attributed to the lack of access to an up-to-date map of the abandoned mine, which existed in an obscure museum collection. This is just one example of the type of incident that can be prevented through availability of more complete information.

Agency Response to Need

DMME recognizes that improved information regarding mined areas will benefit our customers and improve the agency's ability to meet its strategic goals. Therefore, we have undertaken a comprehensive effort to identify every available mine map for the Southwest Virginia coalfield, digitally scan, catalog, and georeference them, and make them available in a state-of-the art information delivery system. Innovations have been made in data development, data storage, and information delivery. While data development continues, results are already apparent in several of DMME's key business areas.